

برخورد با مصدومیت غرق شدگی

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AHA Chains of Survival for adult IHCA and OHCA.

IHCA



OHCA



Rescuers should **start CPR**

immediately if the adult victim is

➤ **Unresponsive**

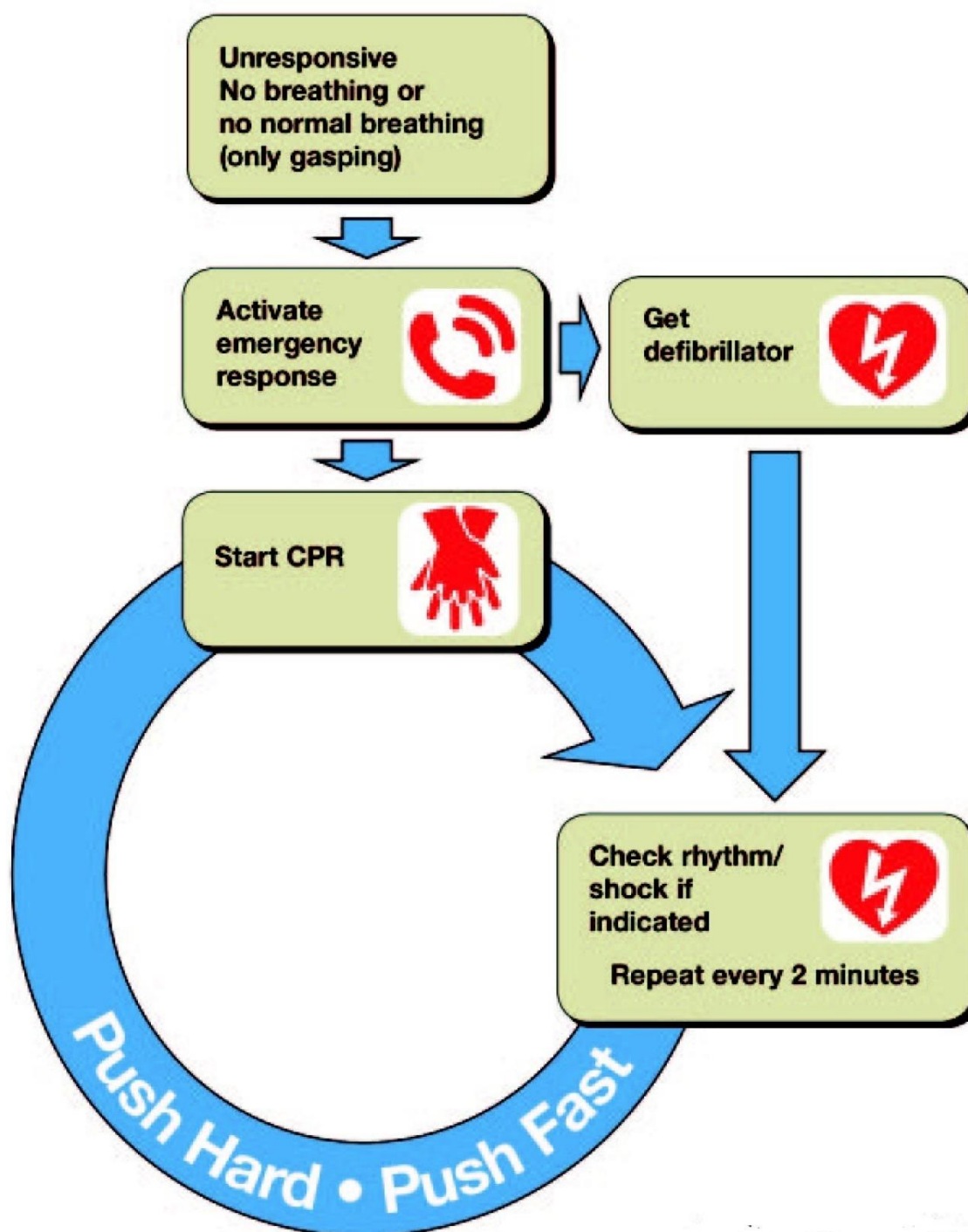
and

➤ **not breathing**

➤ **or**

➤ **not breathing normally** (ie, only gasping).

Healthcare provider should take
no more than 10 seconds
to check for a pulse, and if it is **not felt**
within that time period **chest compressions**
should be started



- start CPR with chest compressions

- *All rescuers, regardless of training, should provide chest compressions to **all cardiac arrest victims***

With the 2010, 2020 AHA Guidelines for CPR, **CPR**
now begins with chest compressions in a

C-A-B

sequence.

CPR for **drowning victims**

should use the traditional **A-B-C**

approach in view of the hypoxic nature of the
arrest.

As soon as the unresponsive victim is removed from the water, the **rescuer should open the airway**, **check for breathing**, and if there is no breathing, **give 2 rescue breaths that make the chest rise** (if this was not done previously in the water).

After delivery of 2 effective breaths, the lay rescuer **should immediately begin chest compressions**

Hypothermia

Thirty to 45 seconds should be spent attempting **to detect respiratory activity and palpate a pulse.** **If none is detected, CPR should be initiated**

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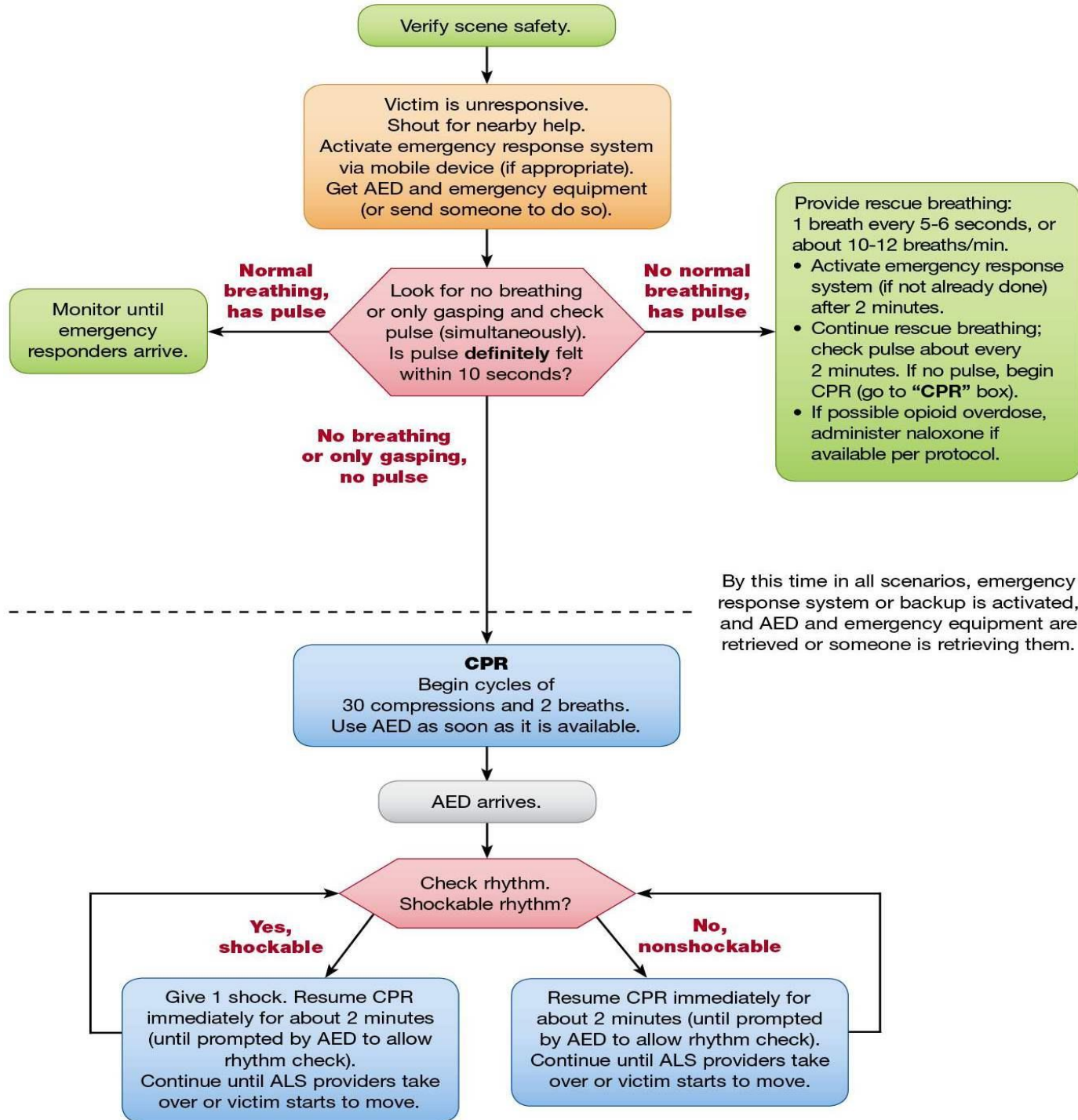




Figure 12-4 High-quality cardiopulmonary resuscitation is essential in the resuscitation of victims of sudden cardiac arrest. Push hard and push fast to a depth of 2+ inches at a rate of 100 compressions per minute. Minimize interruptions and avoid overventilating the patient. Allow full recoil of the chest between compressions.

Summary of High-Quality CPR Components for BLS Providers

Component	Adults and Adolescents	Children (Age 1 Year to Puberty)	Infants (Age Less Than 1 Year, Excluding Newborns)
Scene safety	Make sure the environment is safe for rescuers and victim		
Recognition of cardiac arrest	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
Activation of emergency response system	If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	Witnessed collapse Follow steps for adults and adolescents on the left Unwitnessed collapse Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED Return to the child or infant and resume CPR; use the AED as soon as it is available	
Compression-ventilation ratio <i>without advanced airway</i>	1 or 2 rescuers 30:2	1 rescuer 30:2 2 or more rescuers 15:2	
Compression-ventilation ratio <i>with advanced airway</i>	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
Compression rate	100-120/min		
Compression depth	At least 2 inches (5 cm)*	At least one third AP diameter of chest About 2 inches (5 cm)	At least one third AP diameter of chest About 1½ inches (4 cm)
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	1 rescuer 2 fingers in the center of the chest, just below the nipple line 2 or more rescuers 2 thumb—encircling hands in the center of the chest, just below the nipple line
Chest recoil	Allow full recoil of chest after each compression; do not lean on the chest after each compression		
Minimizing interruptions	Limit interruptions in chest compressions to less than 10 seconds		

*Compression depth should be no more than 2.4 inches (6 cm).

Abbreviations: AED, automated external defibrillator; AP, anteroposterior; CPR, cardiopulmonary resuscitation.

Table 1 **BLS Dos and Don'ts of Adult High-Quality CPR**

Rescuers Should	Rescuers Should <i>Not</i>
Perform chest compressions at a rate of 100-120/min	Compress at a rate slower than 100/min or faster than 120/min
Compress to a depth of at least 2 inches (5 cm)	Compress to a depth of less than 2 inches (5 cm) or greater than 2.4 inches (6 cm)
Allow full recoil after each compression	Lean on the chest between compressions
Minimize pauses in compressions	Interrupt compressions for greater than 10 seconds
Ventilate adequately (2 breaths after 30 compressions, each breath delivered over 1 second, each causing chest rise)	Provide excessive ventilation (ie, too many breaths or breaths with excessive force)

During manual CPR, **injuries** are more

common when **compression**

depth is greater than

6 cm (2.4 inches) than when it is between 5
and 6 cm (2 and 2.4 inches)

An important
consideration is that

brief, generalized

seizures may be the first
manifestation of cardiac
arrest

Patients rewarmed to $\geq 32^{\circ}\text{C}$
without return of spontaneous circulation who are
in asystole can be considered for
termination of
resuscitation in the absence
of other causes of
reversible cardiac arrest.

Ventricular fibrillation becomes increasingly common as the **temperature falls below 28°C** (82.4°F) and **at temperatures below 25°C** (77°F), **asystole** can occur

TABLE 203-3**Rewarming Techniques**

Passive rewarming

- Removal from cold environment

- Insulation

Active external rewarming

- Warm water immersion

- Heating blankets set at 40°C (104°F)

- Radiant heat

- Forced air

Active core rewarming at 40°C (104°F)

- Inhalation rewarming

- Heated IV fluids

- GI tract lavage

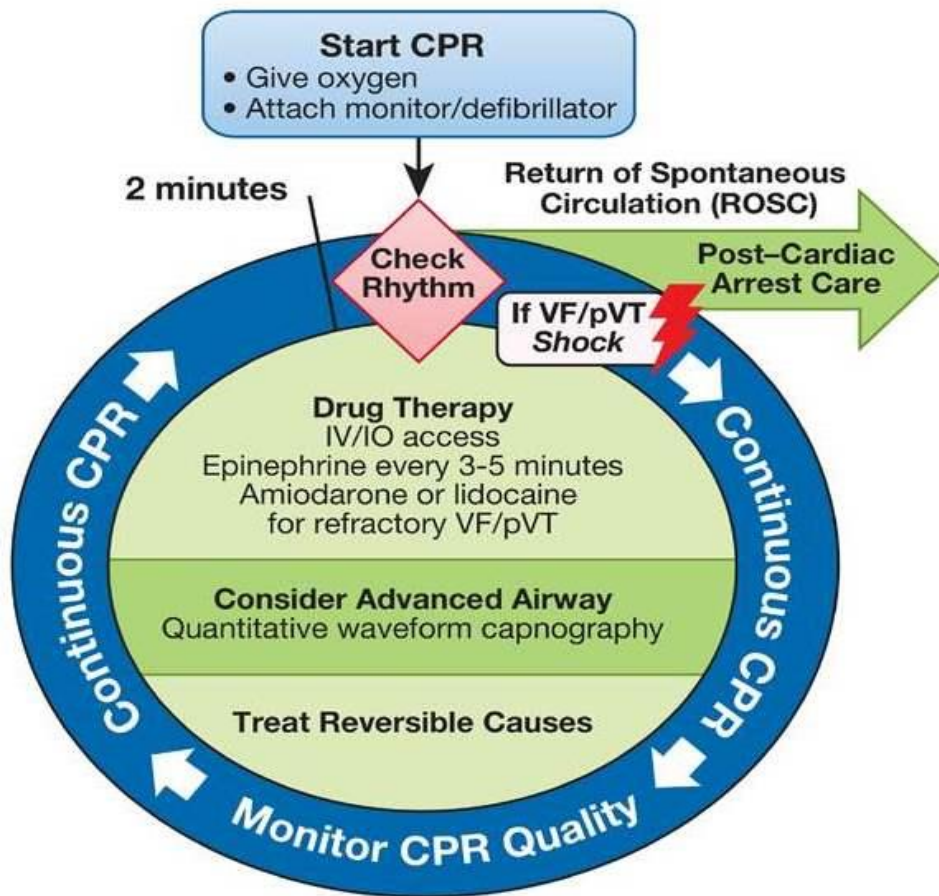
- Bladder lavage

- Peritoneal lavage

- Pleural lavage

- Extracorporeal rewarming

- Mediastinal lavage by thoracotomy



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
 - If PETCO₂ <10 mm Hg, attempt to improve CPR quality.
- Intra-arterial pressure
 - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
-OR-
Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in PETCO₂ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- | | |
|---------------------------|-------------------------|
| • Hypovolemia | • Tension pneumothorax |
| • Hypoxia | • Tamponade, cardiac |
| • Hydrogen ion (acidosis) | • Toxins |
| • Hypo-/hyperkalemia | • Thrombosis, pulmonary |
| • Hypothermia | • Thrombosis, coronary |

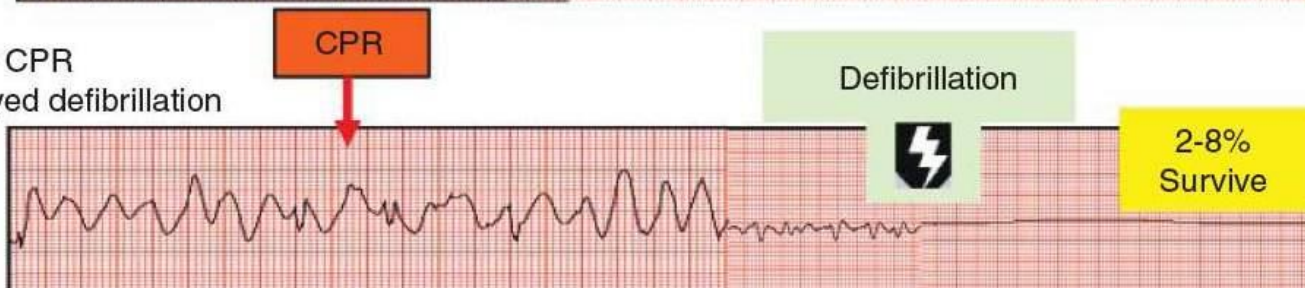
If there is any **doubt** about the
presence of a pulse,
chest compressions
should be resumed immediately

- The most effective treatment of VF in its early phase is defibrillation
- Immediate defibrillation is indicated as soon as VF or pulseless VT is diagnosed

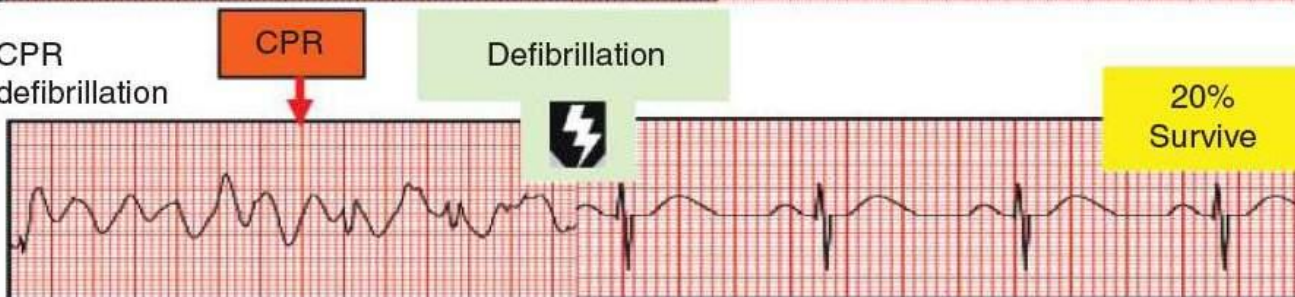
No or delayed CPR and
Delayed defibrillation



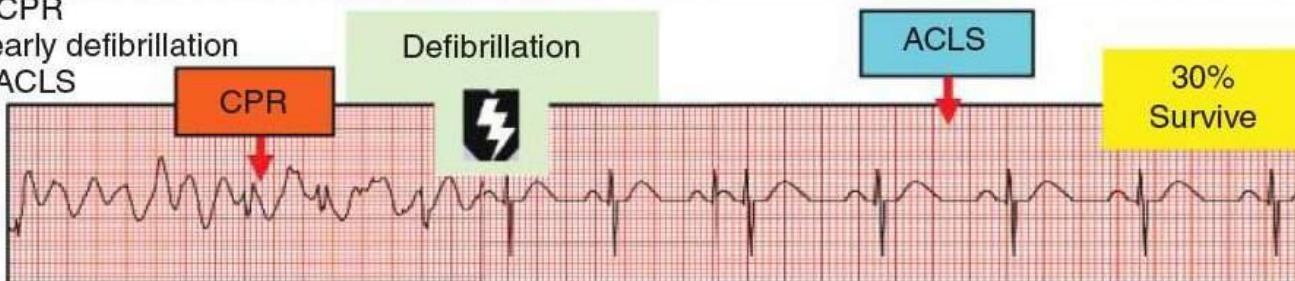
Early CPR
Delayed defibrillation



Early CPR
Early defibrillation



Early CPR
Very early defibrillation
Early ACLS



Submersion Event Algorithm

Prehospital Care:

Rapid, cautious rescue
Cervical spine precautions
(if injury suspected or unknown)
CPR as indicated
Transport (all patients)
Oxygen (all patients)

Emergency Department Care:

Airway/breathing/circulation
(address any problems)
Determine GCS
Treat any associated injury or condition
(e.g., hypovolemia, hypothermia,
seizure, myocardial infarction, etc.)

GCS ≥ 13
and $\text{Sao}_2 \geq 95\%$

Clear cervical spine
Monitor oxygen saturations
Ancillary tests (usually not
indicated)

Observe 4–6 hours

If oxygen saturations and
pulmonary examination are
normal, patient may be safely
discharged home

If $\text{Sao}_2 < 95\%$, or patient has
abnormal physical examina-
tion (rales, rhonchi, wheezing,
retractions, etc.), approach as
if GCS < 13

GCS < 13
or $\text{Sao}_2 < 95\%$

Clear cervical spine
Oxygen saturations
Supplemental oxygen as necessary to
keep $\text{Sao}_2 \geq 95\%$
Endotracheal intubation and positive pressure
ventilation as needed (CPAP, PEEP)
Ancillary tests:
consider CXR, CBC, electrolytes, glucose,
troponin I, PT/PTT, U/A, CK, urine myoglobin,
urine drug screen
Monitor:
Acid-base status, temperature, volume status
(urine output, CVP, etc.)

Patient needs to be admitted
or transported to a facility for
inpatient/ICU monitoring

NPPV or bilevel provides an inspiratory positive airway pressure (IPAP) in addition to end-expiratory positive airway pressure (EPAP), and breaths are usually triggered by the patient





Figure 8-12 Bilevel positive airway pressure (BiPAP) S/T noninvasive ventilation system (Philips Respironics, Inc, Andover, MA). Adjustable parameters include inspiratory positive airway pressure, expiratory positive airway pressure, and breaths per minute. Both BiPAP and continuous positive airway pressure are used to support ventilation in patients with decompensated congestive heart failure, chronic obstructive pulmonary disease, pneumonia, and asthma, but neither mode has a clear benefit over the other.



In NPPV, ***IPAP*** is ***similar*** to ***pressure support*** and, when combined with EPAP, further augments alveolar ventilation, thereby allowing ***some rest of the respiratory muscles during the inspiratory phase***



BOX 8-2**Indications for Initiating Noninvasive Positive Pressure Ventilation**

- Exacerbation of chronic obstructive pulmonary disease
- Exacerbation of congestive heart failure and cardiogenic pulmonary edema
- Exacerbation of asthma
- Immunocompromised patients
- Hypoxemic respiratory failure
- Do-not-resuscitate/do-not-intubate advance directive





Figure 8.11 Continuous positive airway pressure (CPAP) mask (Vital Signs, Inc., Totowa, NJ). The device shown provides continuous positive airway pressure and is run simply by attaching the mask tubing to a wall oxygen source. The amount of CPAP delivered can be adjusted by changing the threshold resistor valve (*arrow*).



BOX 8-3 **Contraindications to Noninvasive Positive Pressure Ventilation**

Impending cardiovascular collapse or respiratory arrest
Severe upper gastrointestinal bleeding
Facial surgery, trauma, or deformity limiting placement of the mask
Upper airway obstruction
Inability to cooperate or protect the airway, altered mental status
Inability to clear respiratory secretions
High risk for aspiration



- It is important to serially assess patient response as soon as 30 minutes after the initiation of NPPV
 - ABGs should be checked within 1 to 2 hours after initiation of NPPV to assess treatment success or failure.
 - Patients who do not improve clinically should be considered for intubation.
 - Glasgow Coma Scale score lower than 10, to be a contraindication to NPPV
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